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ABSTRACT

This New York City Umbrella Program for reading enrichment was implemented in the context of the study of the marine environment. It combined language arts and science study as applied to the study of this environment. One hundred eighty-five pupils from seven fifth grade classes in four schools participated in the program. Classes of students with the greatest need for reading improvement were selected by principals who were receptive to the innovative program. The program objectives were: to determine whether pupils showed improvement in their ability to perceive relationships in science terminology and concepts enabling them to organize and classify information according to common characteristics, and finally, to determine whether pupils showed significant improvement in their ability to read and construct graphs, diagrams and tables. Pupils were pre and post tested using the Science Research Associates criterion-reference test called Probes. The evaluation indicated that all objectives were attained except significant improvement in reading skills. The report concluded that the program proved that the gains in reading comprehension skills of classifying, and distinguishing fact from fiction and opinion was attributed to the quality of the curriculum and program. (JP)

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EVALUATION REPORT

B/E # 20 - 63439

READING IMPROVEMENT THROUGH MARINE ENVIRONMENT EXPLORATION

1975 - 1976

Phyllis E. Gunther

An Evaluation of Selected New York City Umbrella Programs funded under a Special Grant of the New York State Legislature performed for the Board of Education of the City of New York for the 1975-1976 school year

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Chapter I

THE PROGRAM

The Reading Improvement Through Marine Exploration Umbrella Program sought to elevate and enrich children's reading skills and interest in reading by providing them with a combined language arts and science study of their coastal, marshland and woodland environment. Through a cooperative effort, the Gateway National Park Service at Great Kills, Staten Island, and the Community School District #31 worked to develop an innovative educational program.

After an initial ten week pilot program, which served five fifth grade classes from three schools last year, the Reading Improvement Through Marine Exploration Program for 1976 expanded to serve seven fifth grade classes from four schools. Classes of students with the greatest need for reading improvement, i.e. the bottom and middle classes, except for P.S. 46 which only had one fifth grade class, were selected by Principals who were receptive to the Program and whose schools were located in close proximity to the field site. The schools included P.S. 1 and 38, which participated in the Program last year, and P.S. 5 and 46 which participated this year for the first time. The students' socio-economic background was generally part of the working class. While the Program proposal indicated 224 students would participate, in actuality only 185 students were involved.

A Teacher-in-Charge with a science and guidance background, assisted by an Educational Associate with a teaching degree, provided instruction and activities for five classes on a semi-weekly basis for one hour and fifteen minute periods. One class met once a week for one hour and

forty-five minutes; another met once a week for two hours and fifteen minutes. Both staff members were new to the Program. Former staff left due to Central Board excessing procedures. The Classroom Teachers, who stayed with their students through all aspects of the Program, assisted the students with their written and exploratory assignments and followed up with related work in the classroom. Due to late funding, Program staff was not hired until early December and activities did not begin until January.

During January and February, staff worked with the classes in their schools. From March until June, classes were transported by a bus provided by the Umbrella Program to the Gateway National Park. Indoor study was conducted at a classroom laboratory exclusively set aside for the Program. The outdoor study took place at the beach, mud flats and woodland area on this 1200-acre government facility. Animal and plant life and other aspects of the natural environment from the Staten Island coastal area were utilized in the instructional activities to teach neighborhood children certain skills of reading to master content related to environmental problems.

The Program concentrated on three selected skills: (1) Fact, Fiction and Opinion; (2) Classifying; and (3) Constructing and Interpreting Graphs and Tables. It was expected that there would be improvement in these content area reading skills as measured on a pre-post Science Research Associates criterion-referenced test called Probes.

The ecological principle of the interdependency of man and environment was always in the forefront of work in this Program.

Chapter II

EVALUATIVE PROCEDURES

1. Evaluation of Objective 1: To determine whether as a result of participation in the Program the students showed significant improvement in reading skills.

2. Evaluation of Objective 2: To determine whether as a result of participation in the Program students showed improvement in their ability to distinguish fact from fiction and opinion.

3. Evaluation of Objective 3: To determine whether as a result of participation in the Program students showed improvement in their ability to perceive relationships in science terminology and concepts enabling them to organize and classify information according to common characteristics.

4. Evaluation of Objective 4: To determine whether as a result of participation in the Program students showed significant improvement in their ability to read and construct graphs, diagrams and tables.

Objective 1 was not evaluated since the Program was funded late, thereby reducing a nine-month program to six months with only eleven weeks of operation before the New York City Reading Tests for 1976 were administered. Comparison on test results with the 1975 New York City Reading Test for reading achievement could not reliably be attributed to the effectiveness of this program. Therefore, the criterion-referenced tests, which are a more sensitive index, were used to measure program effectiveness. The Program Specialist was apprised of this impossibility of implementation.

For determination of Objectives 2, 3 and 4, the following procedures were employed:

Subjects: All students who attended the Program 60% or more of the time and were present for pre- and post-testing were included. Total number pre-tested was 176. Subtracting 15 who were not present for post-testing, the total number of participants considered in the analysis was 161.

Methods and Procedures: Subsections of the SRA Diagnosis Probes, Reading Level B, which are criterion-referenced, dealing with the specific reading comprehension and study skills identified, were administered on a pre-post basis (1/16/76 and 5/3-5/5/76 respectively). The same form of the test was administered. The Probes measure mastery or lack of mastery of the items. Mastery was determined on the basis of 80% or more of the items correctly answered.

Analysis of Data: Summated data was treated using the McNemar's Test of Correlated Proportions. The test deals with the significance between the numbers of students who passed or failed the pre-test and numbers of students who passed or failed the post-test. Significance was obtained at the .01 level.

For determination of Program's implementation of its proposal, an analysis of the quantitative data employed the following procedures:*

Observations were conducted at the Gateway facility on 4/28, 4/30 and 5/18, a Tuesday, Wednesday and Friday, to observe a substantial number of classes in their instructional activities. An observation was held at P.S. 1 the afternoon of 4/28 when no classes were scheduled

*Evaluation of Program began the end of April as present Project Evaluator was not assigned until that time. Former Project Evaluator was unable to fulfill his obligations due to personal circumstances.

at the site because of the shortened day. At that time, a follow-up classroom activity was observed.

Interviews were conducted with the Program Coordinator, the Teacher-in-Charge, the Educational Associate, five Classroom Teachers, a Principal and a number of students.

Materials, equipment and pupil records were inspected. Copies of news items about the Program were given to the Project Evaluator.

Chapter III

PROGRAM IMPLEMENTATION

Program objectives were implemented by lessons and activities based upon the scientific approach of inquiry and substantiation. The Teacher-in-Charge incorporated in his self-designed materials activities calling for organizing and classifying, charting information, following maps, etc. His written materials and presentations were clear and precise. Although they dealt with complex ideas, they were related to the children's experiences and were given on the children's level of understanding.

Each class period usually consisted of going over the mimeographed material on a specific topic followed by an appropriate field experience. The written lessons included background information, scientific names for items, questions to answers regarding the information and activities to perform indoors and/or outdoors related to the topic under study. As a group, the material was discussed, questions were answered and children were given help in pronouncing the scientific names. During the first month, when the weather was

still chilly, the woodland area was studied for animal life. Through investigation of animal tracks by measurement, location, evidence of what the animal was doing and comparing their drawing with the drawings of tracks given, the children were asked to decide what animal had been in the area. Soil from the wooded beach and "phragmities" area were compared as to moisture, texture and pH with use of hard lens and pH test strips. For the study of sea shells, the phylum and categories under it were discussed and then discovered on the beach trip when the weather was warmer. A tidal pool or mud flat was an excellent resource area for study of tides, plant and animal life. Study of direction using a compass and the existing landmarks were written up as well as a study of magnification by use of eye, hand lens and microscope. The setting up of salt water aquaria was late in commencing since there was difficulty in obtaining strong enough electrical outlets. The children would collect sea water, shells and live organisms which would be a replica of sea life to observe in their laboratory. (At P.S. 1, one of the Classroom Teachers participating in the Program set up a sea water tank and had the children attend it exclusively.)

Materials included thermometers, compasses, magnets, magnifying lens, seeds, notebooks and pencils for each student. Equipment consisted of five aquariums, film strip projector (with a series of film strip material by Schloat Productions), and various materials and apparatus for collecting marine life.

The Educational Assistant offered excellent assistance to the Program by contributing to and following up on activities, leading groups of students in their exploratory activities and assisting them with their written work.

Gateway personnel were receptive to having the Program connected with them. The Park Ranger and Naturalist acted as excellent resources for the staff. They also met with the classes for discussions and field trips.

The classroom laboratory set up for the Program's exclusive use was exquisitely lighted by a skylight and contained lockers for the students' change of clothing. Aside from poor ventilation and insufficient storage space, the room more than adequately served its purpose.

The School Principals and Program Staff were well oriented to the objectives of the Program. On-site orientation and training was given to the Classroom Teachers. Program Staff was trained by the Program Coordinator who was also the District Science Coordinator and the District Reading Coordinator. Their resources and supportive help were always available.

Classes ranged in number from 18 to 37 pupils. Attendance was high.

Chapter IV

FINDINGS

Evaluation of Objective 1: The evaluation was not fulfilled. (See explanation given in Chapter II, Evaluation Design.)

Evaluation of Objective 2: To determine whether as a result of participation in the Program students showed an improvement in their ability to distinguish fact from fiction and opinion.

The SRA Diagnosis Reading Probe Test for Fact, Fiction and Opinion was administered on a pre-post test basis. The same form of the test was administered after a 12-week interval. Subjects numbered 161.

Results of the tests were analyzed according to students' mastery or lack of mastery of 80% or more of the test items. Items numbered 16; mastery was 13 or more items answered correctly. A four cell contingency table of frequencies contained the number of students who passed pre- and post-tests; the number of students who failed pre- and post-test; and the number of students who passed or failed the pre-test and then reversed their placement. Utilizing the McNemar Test for Correlated Proportions, the resultant figure was $z=4.06$, which is significant at the .01 level. Therefore, Objective 2 was attained. (See Table 1 on page 9.)

Evaluation of Objective 3: To determine whether as a result of participation in the program students showed improvement in their ability to perceive relationships in science terminology and concepts enabling them to organize and classify information according to common characteristics.

The SRA Diagnosis Reading Probe Test for Classifying, administered on a pre-post test basis, consisted of 24 items. Mastery (80% or more answered correctly) was 19 or more. Utilizing the McNemar Test for Correlated Proportions, as described above, the resultant figure was $z=5.91$, which is significant at the .01 level. Therefore, Objective 3 was attained. (See Table 1 on page 9.)

Evaluation of Objective 4: To determine whether as a result of participation in the program students showed significant improvement in their ability to read and construct graphs, diagrams and tables.

The SRA Diagnosis Reading Probe Test for Maps, Diagrams, Tables, Graphs, administered on a pre-post test basis, consisted of 16 items. Mastery (80% or more items answered correctly) was 13 or more. Utilizing the McNemar Test for Correlated Proportions, as described above, the resultant figure was z=5.83, which was significant at the .01 level. Therefore, Objective 4 was attained. (See Table 1.)

TABLE 1

FREQUENCY TABLE AND CORRELATED Z TEST BETWEEN PRE- AND POST-TESTINGS
(using SRA DIAGNOSIS PROBES)

N - 161

Test - Item Objective	No. who Passed Pre-test and Failed Post-test	No. who Failed Pre-Test and Passed Post-Test	z
Fact/Fiction/ Opinion	15	47	4.06*
Classifying	5	48	5.91*
Maps, Diagrams, Tables, Graphs	9	56	5.83*

*Significant at .01 level

It is clearly evident that to a remarkable degree the Program as proposed proved its effectiveness by improving reading in the specific skill areas. In addition, the overall response, expressed by every participant with whom the Project Evaluator discussed the Program, was positive and enthusiastic.

Chapter V

SUMMARY OF MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The Reading Improvement Through Marine Environment Exploration Program has proven that the significant gains in the reading comprehension skills of classifying, and distinguishing fact from fiction and opinion, and the reading study skills of mapping and graphing, their construction and interpretation can be attributed to the high quality of its programming. The curriculum provided the stimulus for learning growth by offering the intrinsically motivating exploratory activities of the natural environment in combination with concisely written, informative and provocative content related reading assignments.

The success of the Program can be attributed to excellent cooperation of all personnel involved. Commendations are extended to the Program Coordinator's thorough planning and follow-through; the Reading Supervisor's guidance on the reading aspects; the Teacher-in-Charge's ability to stretch the children's thinking in well-developed activities; the Educational Associate's expertise in science and committment to the Program and the children; and to the supportive committment to the Program given by the cooperating School Principals and Classroom Teachers.

Las year's report found this program exemplary and made no recommendations.

It is recommended that this excellent Program be expanded to serve more students. If visits are reduced to one a week, the number of classes could be doubled and the number of participating schools increased.

It is further recommended that the approval for funding be granted early enough for a September program implementation.

Therefore, it is recommended that this successful, highly motivating program be continued for 1976-1977.